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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/800,020

03/15/2004

Tatsuhiko Nonoyama

461-168

6803

23117 7590 04/18/2007

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

KOSLOW, CAROL M

ART UNIT

PAPER NUMBER

1755

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/18/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/800,020

Applicant(s)

NONOYAMA ET AL.

Examiner

C. Melissa Koslow

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1755

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 February 2007.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 7/24/06
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

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A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 14 February 2007 has been entered.

JP 2001-39766 cited in the Information Disclosure Statement has been considered with respect to the explanation in the specification.

The amendment to the claims has overcome the objection to claim 1. Applicant's arguments with respect to the art rejection have been fully considered but they are not persuasive.

Claim 14 objected to because of the following informalities: "powder" in line 3 is misspelled. Appropriate correction is required.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent application publication 2003/0008762 and U.S. patent 6,692,652.

U.S. patent application publication 2003/0008762 was issued as U.S. patent 6,692,652.

These references teach crystal or grain oriented ceramics composed of polycrystalline body of an alkali pentavalent perovskite having the formula $(\text{Na}_{1-x-t}\text{Li}_x\text{K}_t)(\text{Nb}_{1-y-z}\text{Ta}_y\text{Sb}_z)\text{O}_3$, where x is 0-1, t is 0-1, y is 0-1 and z is 0-1, in which the {100} crystal plane of the grain has a degree of orientation, according to the Lotgering method, of 30% or more. The formula is based on the teachings in column 4, lines 32-45 and column 7, lines 6-29 and claim 1. This formula

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encompasses and thus suggests the claimed formula. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). Given the overlap, one of ordinary skill in the art would expect the taught ceramic having the overlapping composition to inherently have the crystal system of claim 13, absent any showing to the contrary. The examples show that the grain oriented alkali pentavalent perovskite ceramics have a d_{31} and a g_{31} at least 1.1 times these constants in non-oriented alkali pentavalent perovskite ceramics. Given this teaching, one of ordinary skill in the art would expect the suggested ceramics, having the overlapping composition, to inherently have improvement rates and differences that at least overlap the claimed ranges of claims 3-12.

The references teach producing this ceramic by mixing an anisotropic shaped powder, such as platelike crystals, which has a crystal growth plane that has lattice coherency with a specific crystal plane with a reaction material that can react therewith to form the taught ceramic, molding the mixture so the anisotropic shaped powder is oriented and heat treating the molded mixture to cause the mixture to react and form the ceramic. Column 4, lines 38-45 teaches the anisotropic powder can have the formula $(Na_{1-x-t}Li_xK_t)(Nb_{1-y-z}Ta_ySb_z)O_3$, where x is 0-1, t is 0-1, y is 0-1 and z is 0-1, which encompasses that claimed.

As stated above, these references suggest the claimed ceramic. Paragraph [0155] and column 23, lines 11-19 teach the taught grain oriented alkali pentavalent perovskite ceramics are suitable as piezoelectric or dielectric materials. Accordingly, one of ordinary skill in the art

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would have found it obvious to use the taught ceramic in piezoelectric or dielectric elements. The references suggest the claimed ceramic, process and elements.

Applicants argue the claimed ceramics having unexpected properties, but they have not shown that the taught ceramics do not have these argued properties. The rejection is maintained.

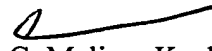
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

cmk
April 12, 2007


C. Melissa Koslow
Primary Examiner
Tech. Center 1700